

**WHAT IS CLAIMED IS:**

1. A process for monitoring and/or controlling at least one nitrating process comprising:  
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a) measuring spectrometrically and online composition of an acid phase of a nitration reaction mixture,  
b) relaying data from a) to a process control system in order to monitor  
10 and to control the production process.
2. The process of Claim 1 in which an infrared spectrometer is used in a).
3. The process of Claim 1 in which a near infrared spectrometer is used in a).
- 15 4. The process of Claim 1 in which a measuring cell for spectrometric measurement in a) is located in a by-pass.
5. The process of Claim 1 in which the data are based on the spectrometric  
20 online measurement and evaluation with a matrix-specific calibration model.
6. The process of Claim 5 in which a spectrum obtained by online measurement is evaluated with a matrix-specific calibration model based on comparative titration measurements.
- 25 7. The process of Claims 1 to 6 in which a first supply of nitric acid for mononitration and a second supply of nitric acid for dinitration is monitored and/or controlled after spectrometric examination after mononitration and/or after dinitration.

8. The process of Claims 1 to 6 in which an infrared spectrometer is connected to several measuring-points and is operated in multiplex mode in a) one or several nitration units.
- 5 9. The process of Claim 8 in which the infrared spectrometer is a near infrared spectrometer.
10. A product capable of automatically implementing the steps of:
  - 10 a) evaluating data obtained by a spectrometric examination of an acid phase after a nitration to determine the content of nitric acid in the acid phase, and
  - b) relaying the nitric-acid content data from a) to a regulator to control  
15 metering of nitric acid to a nitration reaction mixture.
11. The product of Claim 8 having a matrix-specific calibration model for evaluating the nitric acid content data from a).
- 20 12. The product of Claim 10 which is designed for automated regulation of the nitrating process.
13. A facility for monitoring and/or controlling a nitrating process comprising:
  - 25 a) means for spectrometric examination of an acid phase after a nitration, and
  - b) regulating means for metering nitric acid into at least one nitrating reactor, the regulating means being designed to regulate metering of  
30 nitric acid on the basis of the spectrometric examination.

14. The facility of Claim 13 in which the means for spectrometric examination comprises an infrared spectrometer.
- 5 15. The facility of Claim 13 in which the means for spectrometric examination comprises a near infrared spectrometer.
16. The facility of Claims 13 to 15 having a bypass downstream from at least one nitrating reactor with a measuring cell for the spectrometric examination  
10 located in the bypass.
17. The facility of Claims 13 to 16 having means for measuring a spectrum and means for evaluating the measurement with a matrix-specific calibration model based on comparative titration measurements.
- 15 18. The facility of Claims 13 to 17 in which the means for spectrometric measurement comprises an infrared spectrometer with electronic evaluating unit, and the infrared spectrometer is connected to several measuring-points for spectrometric examination of the acid phase after a nitration, and the  
20 infrared spectrometer is designed for multiplex operation.
19. The facility of Claims 13 to 18 having a process control system for the regulating means and a connection of the means for spectrometric examination to the process control system.
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